Group identification

1) only Carbon & Hydrogen Containing Compound:-
   a) alkane (only single Bond)
   b) Cycloalkane (only single Bond in ring)
   c) alkene (atleast one C=C)
   d) alkyne (atleast one C≡C)
   e) Aromatic (like Benzene)

eg 1) $CH_3CH_2CH_3$ → Propane (Alkane) 2) Cyclopentane (Cycloalkane) 3) alkene

4) Alkene → diene 5) (Benzene) → Aromatic

2) Alcoholic group

3) Carboxylic Acid (R → alkyl group)
   eg CH_3– Methyl, C_2H_5– Ethyl, C_3H_7– Propyl

4) R–C(=O)–R Ketone & ROOR

5) RCHO Aldehyde

Bond or Source or Property of Compound → Formaldehyde (Common or Trivial Name) Methanal (IUPAC)

6) Ester

7) 1° amide, 2° amide, 3° amide

8) R–O–R or R–O–R Ether

9) Carboxylic Acid Anhydride

10) Sulphonic Acid

eg 2° amide; Ethyl methyl ether (Common Name); ketone; alkene; alkyne; aldehyde (main group of Comp); β,γ-unsaturated aldehyde

Cyclic ester (Lactone); γ-lactone; β-lactone; Cyclic Amide (Lactam); γ-lactam

ketone; Carboxylic (main Group); β-Keto Acid; β-Keto acid

ω-lactam (Caprolactam) ⇒ Used to form Nylon-6 polymer

aldehyde

1° amine Group; R–NH–R 2° amine; R_3N (tertiary Amine) 3°

3° amine

nitrile Group; Isonitrile

Naming of Organic Compounds

1) Trivial or Common Name
2) IUPAC Nomenclature → International Union of Pure & Applied Chemistry

Rule:- 2°P + 1°P + W.R + 1°S + 2°S

Secondary Prefix → Substituent Name

Primary Prefix → Cyclo

Word Root → Main or Principle Carbon Chain

Primary Suffix → Saturation & Unsaturation b/w Carbons in main Chain

Secondary Suffix → Highest Priority Group → functional group of Compound.

Whose numbering is done "only Carbons are numbered"

1°S
1 C=C ⇒ -ene
1 C=C ⇒ -yne
2 C=C ⇒ -diene
2 C≡C ⇒ -diyne
1 C=C + 1 C≡C ⇒ -enyne
2 C=C + 1 C≡C ⇒ -dienyne

Eg –NO₂ Nitro, –F Fluoro, –Cl Chloro, –Br Bromo, –I Iodo, –OR → –OCH₃ Methoxy

(b) Alkyl → no. of Carbon

C_1 ⇒ meth, C_2 → Eth, C_3 → Prop, C_4 → But, C_5 → Pent, C_6 → Hex, C_7 → Hept, C_8 → Oct, C_9 → Non, C_{10} → Dec, C_{11} → Undec, C_{12} → Dodec

Isopropyl; Propyl or n-propyl; Neopentyl; Neohexyl; Isobutyl; Isopentyl; 'Neo' → starts with 5 Carbon

(#) 'Sec', 'Tert' are not used in IUPAC. ↓ Secondary, tertiary

(#) iso, neo can be used in IUPAC.

Pg-16 (Write table in your Notebook)

eg 1°P → X; 2°P → ✓; W.R → Hex; 1°S → -ene; 2°S → X

4-Ethyl-2,3-dimethyl hexane (2°P, W.R, 1°S)

JZ Rule: Jaldi → Zyada

Same Position Comparison in 1°S: C=C > C≡C > single (C–C)